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**WASHINGTON STATE DEPARTMENT OF HEALTH  
COLORECTAL AND PROSTATE CANCER SCREENING  
PROJECT: PHYSICIAN KAP SURVEY REPORT**

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## **EXECUTIVE SUMMARY**

### **Overview**

In order to meet one of the Washington State Comprehensive Cancer Control Plan's (CCCCP) strategies of establishing a baseline of primary care providers' knowledge, attitudes, and practices concerning colon and prostate cancer screening, we conducted a survey of a simple random sample of Washington primary care providers. This survey was designed to assess providers' current beliefs and practices regarding colon cancer screening (fecal occult blood testing [FOBT], flexible sigmoidoscopy, and colonoscopy), and prostate cancer screening (digital rectal exam [DRE], and prostate specific antigen [PSA]) in relation to informed decision making. The survey also included several demographic items to assess which practice and physician characteristics (such as size/location of practice, physician gender, etc.) are associated with screening beliefs and practices.

We implemented the survey during November – December 2004. Our sample of 700 physicians yielded 555 eligible to complete our survey, and we received 397 completed surveys for a response rate of 72%. In this report, we summarize survey findings and recommendations for physician interventions to improve colon cancer screening practices and informed decision making practices for prostate cancer screening.

### **Key Findings: Colon Cancer Screening**

- 76% of physicians recommend one or more tests in accordance with U.S. Preventive Services Task Force guidelines
  - Female physicians and physicians who had graduated from medical school less than 30 years ago were more likely to recommend one or more tests appropriately
  - Obstetrician/gynecologists were less likely than other specialists to recommend one or more tests in agreement with guidelines and less likely to rate colon cancer screening as “very important”
- 90% of physicians perform FOBT, but only 37% use any mechanism to encourage patients to return FOBT kits
  - Practicing in a single-specialty clinic, in a rural setting, and graduating from medical school 20 or more years ago were positively associated with encouraging FOBT kit return
- 65% of physicians use one or more mechanisms to encourage patients to complete endoscopy referred to another provider
  - Time since graduating from medical school was positively associated with encouraging patients to complete referred tests
- 93% of physicians perceive patient anxiety and embarrassment about screening procedures to be a major or minor barrier to colon cancer screening (endorsed by more physicians than any other barrier)

## **Recommendations for Intervention**

- Educate physicians about appropriate start ages and screening intervals for colon cancer screening tests; encourage them to recommend all three tests to accommodate patient screening preferences
- Encourage physicians to adopt mechanisms to ensure that patients complete and return FOBT kits, as well as endoscopic procedures referred to other providers
- Educate physicians about strong association of physician recommendation with colon cancer screening compliance; patients may be less reluctant to engage in screening than physicians think
- Target younger physicians and medical students for training on practice systems (to improve colon cancer screening completion) and their use

## **Key Findings: Prostate Cancer Screening**

- Most physicians recommend DRE and PSA to their average risk male patients, beginning at a younger age than most clinical guidelines recommend
- Only 37% of physicians recommend stopping DRE at any age, and 52% recommend stopping PSA at any age
- Seventy-four percent of physicians always or almost always discuss the benefits and risks of prostate cancer screening with their patients; few regularly use educational tools (such as pamphlets, websites) during this discussion
  - Only 35% of physician always or almost always discuss the side effects of prostate cancer treatment with their patients
- Male physicians who have personally been screened with PSA are more likely to recommend PSA testing to their patients and less likely to discuss benefits and risks of screening
- Fifty-five percent of physicians collect family history of prostate cancer for the majority of their male patients

## **Recommendations for Intervention**

- Educate physicians about current guidelines for prostate cancer screening starting age (50 if average risk) and stopping age (most guidelines agree that men with less than 10 years of life expectancy should not be screened)
- Provide physicians with educational tools for their patients, such as written materials and websites, that cover the major issues surrounding prostate cancer screening
- Since family history is a significant risk factor for prostate cancer screening, encourage physicians to collect family history information for prostate cancer for all of their male patients

## **Conclusion**

We successfully implemented a physician survey and achieved a high response rate. We obtained a great deal of information about physicians' knowledge, attitudes and practices for two important cancer sites. This baseline picture of state physicians can inform recommendations for

physician interventions to improve colon cancer screening rates and prostate cancer informed decision making practices. A similar survey could be implemented on a regular basis (every 5 years) to measure the impact of WA CCCP activities.

## KAP SURVEY REPORT

In order to meet one of the Washington State Comprehensive Cancer Control Plan's (CCCCP) strategies of establishing a baseline of primary care providers' knowledge, attitudes, and practices concerning colon and prostate cancer screening, we conducted a survey of a simple random sample of Washington primary care providers. This survey was designed to assess providers' current beliefs and practices regarding colon cancer screening methods (fecal occult blood testing [FOBT], flexible sigmoidoscopy, and colonoscopy), and prostate cancer screening (digital rectal exam [DRE], and prostate specific antigen [PSA]). The survey also included several demographic items to assess which practice and physician characteristics (such as size/location of practice, physician gender, etc.) are associated with screening beliefs and practices.

## METHODS

### Survey Development

Carrie Klabunde and colleagues recently conducted a national survey of primary care providers' (PCPs) colon cancer screening knowledge, attitudes, and practices.<sup>1</sup> We adapted several items for this survey so that we could compare Washington PCPs to the national sample of PCPs. We adapted other items from other published physician surveys and sought additional items and feedback on the colon screening section of the survey from the Washington State Colon Cancer Task Force. The colon cancer screening sections of the survey emphasize current practices in terms of recommending screening, performing the different screening tests, follow-up of positive results, and collection of family history of colon cancer. There are also items examining perceived patient and system-level barriers to colon cancer screening, and the perceived importance of colon cancer screening relative to other forms of cancer screening.

The prostate cancer screening section of the survey has a slightly different emphasis, in keeping with the CCCC goal of increasing informed decision making about prostate cancer screening (rather than simply increasing prostate cancer screening). There are items measuring current recommendations for prostate cancer screening, but also several items assessing whether risks and benefits associated with screening are discussed with patients, whether informational tools are used (brochures, etc.), and which issues are most important to discuss. Most of these items were drawn from published surveys of physicians' prostate cancer screening knowledge, attitudes, and practices.

The final section of the survey includes several items assessing the physician and practice characteristics. These items are essentially the same as those used by Klabunde et al.<sup>1</sup> and will be useful in determining whether physician and practice characteristics predict cancer screening knowledge, attitudes, and/or practices. We are particularly interested in examining differences between primary care provider specialty (family practice, general practice, internal medicine, and obstetrics/gynecology) and practice location (urban or rural area).

The survey went through several drafts and revisions during February – June 2004. We sought feedback from the primary project team at the University of Washington (Jeff Harris, Diane

Martin, Deb Bowen, and Peggy Hannon) as well as from the Colon Cancer and Prostate Cancer Task Forces and other colleagues. In order to keep the survey brief, we selected those items that were deemed most essential for the goals of the project for the final version of the survey (otherwise, fewer physicians would be willing to complete it). We did initial pilot testing by asking four practicing physicians to complete the survey and give us their feedback. Their comments were incorporated into the final survey. The physicians' comments were minimal and they noted that the survey was easy to follow and did not take long to complete.

The final version of the survey is presented in the Appendix.

### **Survey Implementation**

Once the initial version of the survey was developed, we submitted it to the Washington State Institutional Review Board (WSIRB) for review. Due to the anonymous nature of the survey and the non-sensitive questions it includes, the WSIRB declared the survey exempt from review. Gilmore Research Group (GRG) administered the survey. We obtained a list of Washington primary care providers' names, office addresses, and office telephone and fax numbers from the Washington State Medical Association, and GRG sent the survey to a simple random sample of 700 primary care providers drawn from this list during October-November 2004.

We set a response rate goal of 70%. GRG maximized the response rate by contacting physicians through multiple channels, giving a monetary incentive to complete the survey, and providing participants with several survey modes. All physicians in the sample were faxed a pre-notification letter, which informed them that the survey was in the mail and explained the purposes of the survey and the incentive to complete it (physicians were offered \$50.00 to complete the survey). All physicians in the sample received the survey via FedEx (to increase the likelihood that the physician would receive the survey), and the mailing included a check and a pre-paid overnight envelope to return the survey.

Since mail-only surveys of physicians have traditionally yielded low response rates (ca. 20-30%), physicians in the sample who did not respond to the first mailing and postcard reminder (sent November 2004) were reminded by telephone. Interviewers offered to complete the survey over the phone or make an appointment to do so, and gave physicians the option to complete the survey on paper. GRG interviewers contacted physicians by telephone during December 2004 until they encountered a direct refusal or received a completed survey.

As a final option, physicians were able to complete the survey on the World Wide Web; GRG developed a web-based version of the survey. All materials that physicians received from GRG included the survey website. Physicians were also reminded of the possibility of completing the survey on the web when they were contacted by telephone.

## RESULTS

### Physician Response Rate

Gilmore Research Group mailed surveys to 700 primary care physicians in Washington. Of the initial sample, 555 physicians were eligible to participate. The most common reasons for ineligibility included not being a primary care physician (N = 83) and not being reachable at the address on the mailing list (N = 48). We received 397 completed surveys for a response rate of 72%. We were not able to collect any data from non-respondents, so we were not able to assess whether there was any response bias (important differences between physicians who chose to complete the survey and those who did not).

### Sample Characteristics

Tables 1 – 6 summarize the physicians' demographic and practice characteristics.

Physician Specialty. Most of the physicians in the survey were family practitioners (N = 214). Very few physicians described their specialty as general practice (N = 15), and these were grouped with family practitioners for all analyses. The other physicians described their specialty as internal medicine (N = 116) or obstetrics/gynecology (N = 52).

Physician Practice Settings. The table below summarizes the practice settings of the participating physicians by practice specialty. The majority of the physicians were in single specialty practices with 15 or fewer physicians in urban locations.

#### Physicians' Practice Settings

	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
Type of setting % (N)				
Single specialty	74.45% (169)	42.61% (49)	74.00% (37)	65.05% (255)
Multi-specialty	25.55% (58)	57.39% (66)	26.00% (13)	34.95% (137)
# of physicians in practice % (N)				
1	17.54% (40)	7.76% (9)	22.45% (11)	15.27% (60)
2 – 5	32.46% (74)	26.72% (31)	46.94% (23)	32.57% (128)
6 – 15	30.26% (69)	23.28% (27)	22.45% (11)	27.23% (107)
16 – 49	11.84% (27)	18.97% (22)	2.04% (1)	12.72% (50)
50 – 99	1.32% (3)	7.76% (9)	2.04% (1)	3.31% (13)
100+	6.58% (15)	15.52% (18)	4.08% (2)	8.91% (35)
Practice location % (N)				
Urban	80.79% (185)	84.48% (98)	88.46% (46)	82.87% (329)
Rural	19.21% (44)	15.52% (18)	11.54% (6)	17.13% (68)

Physicians' Patient Characteristics (Table 2). The majority of the physicians reported that 25 – 74% of their patients are over the age of 50, and that 50 – 74% of their patients are female.



Physician Demographic Characteristics (Tables 3 – 4). The majority of the physicians were male (68%) and white (84%). Time since completing medical school was fairly evenly distributed, with 14% completing medical school less than 10 years ago, 32% completing 10 – 19 years ago, 34% completing 20 – 29 years ago, and 20% completing 30 or more years ago.

Physicians' Screening Rates (Tables 5 – 6). We asked all physicians ages 50 and over whether they had been screened for colon cancer and all male physicians whether they had been screened for prostate cancer. Eighty percent of the physicians ages 50 and over reported that they had been screened for colon cancer (see Table 5) and 68% of the male physicians had been screened for prostate cancer (54% with PSA; see Table 6).

Tables 7 – 12 summarize the same analyses presented above by rural and urban practice location. We used rural/urban commuting area codes (RUCAs) based on zip code of practice location to define whether physicians were in rural or urban areas. We began with the four-category system proposed by the Washington Department of Health (please see [http://www.doh.wa.gov/Data/Guidelines/RuralUrban.htm#RUCA\\_goodchoice](http://www.doh.wa.gov/Data/Guidelines/RuralUrban.htm#RUCA_goodchoice)). These categories are Urban, Suburban, Large Town, and Small Town/Isolated. Physicians were defined as having urban practices if they were located in an urban or suburban area, and as having rural practices if they were located in a large town or small town/isolated area.

## **Colon Cancer Screening Knowledge, Attitudes, and Practices**

Physician Recommendations (Tables 13 – 15). We asked physicians questions about whether they recommended colon cancer screening tests to their average-risk patients, starting age, and test interval. We then compared physicians' responses to United States Preventive Services Task Force (USPSTF) guidelines. Most physicians recommend FOBT and colonoscopy, but only about half were in accordance with guidelines for starting age and test interval. Fewer physicians recommend flexible sigmoidoscopy. The majority of physicians recommend at least one method of colon cancer screening in accordance with clinical guidelines. Obstetrician/gynecologists were less likely than other specialists to recommend colonoscopy in agreement with guidelines.

### Physicians' Recommendations for Colon Cancer Screening

% Recommending screening method in accordance with USPSTF guidelines (CI)	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
FOBT	54.98 (48.18 – 61.59)	66.99 (57.33 – 75.40)	52.17 (33.90 – 62.10)	58.06 (52.87 – 63.07)
Flexible Sigmoidoscopy	46.27 (37.98 – 54.77)	56.36 (43.06 – 68.81)	45.83 (27.42 – 65.46)	48.83 (42.15 – 55.55)
Colonoscopy	57.44 (50.36 – 64.22)	64.49 (54.96 – 72.99)	34.09 (21.67 – 49.17)	56.65 (51.35 – 61.80)
<b>Any</b>	<b>75.11 (69.08 – 80.30)</b>	<b>82.76 (74.74 – 88.62)</b>	<b>67.31 (53.50 – 78.65)</b>	<b>76.32 (71.87 – 80.26)</b>

Physician Performance of FOBT (Table 16). Ninety percent of the physicians perform FOBT. Only 37% have some type of mechanism to encourage patients to return the FOBT kits. The most common mechanism was a chart reminder (54%), followed by telephone calls (26%) and

mail reminders (25%; physicians could indicate using more than one mechanism). Most physicians (90%) recommend a colonoscopy as a follow-up test for a positive FOBT, but 25% reported recommending a repeat FOBT (physicians could select multiple choices).

Physician Performance of Flexible Sigmoidoscopy (Table 17). Relatively few physicians perform flexible sigmoidoscopy (20%). No obstetrician/gynecologists in our sample perform flexible sigmoidoscopy. We also asked whether physicians biopsy polyps themselves or refer for excision. Most physicians who perform flexible sigmoidoscopy (73%) perform biopsies when they find polyps and recommend colonoscopy as an initial follow-up test (99%).

Physician Performance of Colonoscopy (Table 18). Only 4% of the physicians in our sample report that they perform colonoscopy, which is consistent with what we'd expect in a sample of primary care physicians. No obstetrician/gynecologists perform colonoscopy.

Referral to Other Providers for Colon Screening and Follow-up Tests (Table 19). We asked physicians whether they had a mechanism to ensure that patients completed tests they were referred to other providers for. Sixty-five percent of the physicians use at least one such mechanism. The most common mechanism was having test results returned to the physician's office (73%), followed by making the appointment for the patient (50%).

Physicians' Comparison of Importance of Cancer Screening Sites (Table 20). Physicians were asked to rate the importance of several cancer screening sites. Almost all family practice and internal medicine physicians rated colon cancer screening as very important (91% and 94%, respectively). Fewer obstetrician/gynecologists (65%) rated colon cancer screening as very important. Since many women see obstetrician/gynecologists for primary care, these women may be less likely to be screened for colon cancer than women receiving care from other primary care specialists. In comparison with other cancer sites, physicians were most likely to rate breast cancer as very important (95%) and least likely to rate prostate cancer screening as very important (60%).

Perceptions of Barriers to Colon Cancer Screening (Tables 21 – 22). Physicians rated the importance of several potential barriers to colon cancer screening. The majority of physicians endorsed patient barriers as major or minor barriers to colon cancer screening, such as embarrassment and anxiety about the tests (93%) and patient unawareness of screening (92%). Physicians were somewhat less likely to endorse provider and system barriers, with the exception of the cost of screening and lack of insurance coverage (84%).

Physicians' Collection of Family History of Colon Cancer (Table 23). Most physicians (65%) collect family history of colon cancer for 75% or more of their patients. However, 12% of physicians collect this information for less than 25% of their patients.

Tables 24 – 34 present tables summarizing physicians' colon cancer knowledge, attitudes, and practices by rural/urban practice location, and Tables 35 – 42 present physicians' colon cancer screening recommendations their own screening status (only physicians ages 50 and over were included in this analysis). Physicians were defined as screened if they had ever been screened

for colon cancer with FOBT, flexible sigmoidoscopy, colonoscopy, or double contrast barium enema.

### **Logistic Regression Analyses Predicting Colon Cancer Screening Best Practice**

Colon Cancer Screening Recommendations (Tables 43 – 46). Physicians were counted as using best practice in their colon cancer screening recommendations when they recommended a test in accordance with USPSTF guidelines for starting age (age 50) and test interval (1 year for FOBT, 5 years for flexible sigmoidoscopy, 10 years for colonoscopy). We conducted logistic regression models with best practice as the outcome and physician characteristics as predictors.

Our primary analysis was the association of physician characteristics with best practice of any colon cancer screening method. Female physicians were more likely than male physicians to recommend at least one colon cancer screening test according to USPSTF guidelines. Recent medical graduates were also more likely to be in agreement than physicians who graduated 30 or more years ago. Physicians specializing in internal medicine and physicians practicing in rural areas were marginally more likely to recommend one or more tests in agreement with guidelines.

#### Associations Between Selected Characteristics and Colon Cancer Screening Best Practice With One or More Tests

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
<b>Specialty</b>			
Family/General Practice	229	REF	REF
Internal Medicine	116	1.65 (0.90 – 3.03)	.10
Obstetrics/Gynecology	52	0.71 (0.34 – 1.48)	.36
<b>Practice Type</b>			
Single Specialty	254	0.83 (0.48 – 1.43)	.50
Multiple Specialty	137	REF	REF
<b>Practice Location</b>			
Urban	329	REF	REF
Rural	68	2.04 (0.97 – 4.28)	.06
<b>Physician Sex</b>			
Male	270	REF	REF
Female	126	2.07 (1.08 – 3.96)	.03
<b>Time Since Medical School</b>			
< 10 years	54	REF	REF
10 – 19 years	127	0.62 (0.24 – 1.59)	.32
20 – 29 years	134	0.59 (0.24 – 1.48)	.26
30+ years	80	0.33 (0.13 – 0.86)	.02

Note. Physicians were counted as using best practice if they indicated that they recommended one or more colon cancer screening tests in accordance with national guidelines. 76.32% of the physicians in this analysis were counted as using best practice. Adjusted odds ratios & p-values are from model including all characteristics.

We also conducted analyses separately for each screening test (see Tables 44 – 46). Findings were generally consistent with those described above, except that we found that obstetrician/gynecologists were less likely to recommend colonoscopy appropriately (see Table 46).

We repeated these analyses with only physicians ages 50 and over and examined the role of own screening status as a predictor (see Tables 47 – 50). Physicians' own screening status was not significantly associated with best practice in these models.

Mechanisms to Ensure Colon Cancer Screening Tests Are Completed (Tables 51 – 52). We asked physicians about two types of mechanisms to ensure that screening tests are completed. Physicians were asked whether they used any mechanism to ensure that patients return home FOBT kits. Several characteristics were associated with using such a mechanism (see Table 51). Being a physician in a single-specialty practice, practicing in rural areas, and graduating from medical school 20 or more years ago were all positively associated with using mechanism to ensure FOBT kit return.

We also asked physicians whether they used any mechanism to ensure that patients completed screening and follow-up tests for which they had been referred to another provider (see Table 52). Time since graduating from medical school was positively associated with using such a mechanism. Obstetrician/gynecologists were marginally less likely to report using a mechanism to ensure that referred tests were completed ( $p = .08$ ).

We repeated these analyses with only physicians ages 50 and over and examined the role of own screening status as a predictor (see Tables 53 – 54). Physicians' own screening status was not significantly associated with best practice in these models.

## **Prostate Cancer Screening & Informed Decision Making Knowledge, Attitudes, and Practices**

Our analyses of prostate cancer screening items only included family practice and internal medicine primary care providers.

Physician Recommendations (Tables 55 – 56). The majority of physicians recommend DRE (90%) and PSA (83%) to average-risk male patients. Most physicians recommend beginning testing during the mid-40's (M start age = 45 for DRE and 48 for PSA). While there is general agreement that prostate cancer is only beneficial for men who have 10 or more years of life expectancy, only 37% of physicians report that they stop performing DRE at a given age (M stop age = 79 years), and 52% report stopping PSA (M stop age = 78 years).

Discussing Risks and Benefits of Prostate Cancer Screening (Tables 57 – 59). We asked physicians to rate how often they discussed the risks and benefits of screening for prostate cancer with patients when deciding whether to perform DRE and order PSA. Most of the physicians (74%) report that they “always or almost always” discuss the risks and benefits of PSA testing; about half (52%) report that they always/almost always discuss risks and benefits of prostate cancer screening when they perform DRE.

#### Physician Discussion of Risks and Benefits of Prostate Cancer Screening

	Family Practice (N = 229)	Internal Medicine (N = 116)	Total (N = 345)
% Discussing risks/benefits of DRE (CI)			
Rarely/never	20.80% (15.98 – 26.61)	27.59% (20.20 – 36.44)	23.10% (18.92 – 27.88)
Sometimes	23.45% (18.36 – 29.44)	25.00% (17.94 – 33.70)	23.98% (19.73 – 28.81)
Always/almost always	55.31% (48.75 – 61.69)	45.69% (36.83 – 54.84)	52.05% (46.73 – 57.32)
% Discussing risks/benefits of PSA (CI)			
Rarely/never	4.85% (2.70 – 8.56)	5.26% (2.38 – 11.26)	4.99% (3.12 – 7.89)
Sometimes	16.30% (12.03 – 21.71)	30.70% (22.90 – 39.78)	21.11% (17.09 – 25.79)
Always/almost always	78.41% (72.56 – 83.31)	64.04% (54.80 – 72.33)	73.61% (68.65 – 78.03)

Note. CI = 95% confidence interval. Responses do not sum to 100% because three physicians selected “don’t know.”

We also asked physicians what types of educational materials they used to discuss benefits and risks of prostate cancer screening. Very few physicians reported always using any materials (see Table 58). Physicians were most likely to use written materials, with 37% using written materials sometimes, and 9% using them always or almost always. Very few physicians use videotapes and websites.

Finally, we asked physicians how likely they were to discuss each of several issues pertaining to prostate cancer screening when deciding whether to order PSA (see Table 59). Physicians were more likely to discuss issues about the PSA test’s performance characteristics, such as efficacy in detecting prostate cancer and the possibility of false-positive results (64% “very likely” to discuss). Most physicians do not discuss “downstream” issues, such as the possible side effects of treatment for prostate cancer (35% “very likely” to discuss).

Physicians’ Collection of Family History of Prostate Cancer (Table 60). Having a family history of prostate cancer is a significant risk factor for prostate cancer. About half of the physicians (55%) collect family history information for prostate cancer for 75% or more of their male physicians.

Male Physicians and Screening Status (Tables 61 – 66). We repeated the analyses presented above with only male physicians and compared physicians who had ever been screened for prostate cancer with PSA to those who had not. Physicians who have been screened with PSA

are more likely to recommend PSA to their patients (98%) than physicians who have not been screened with PSA (75%).

Tables 67 – 72 present the above analyses comparing rural and urban physicians.

### **Logistic Regression Analyses Predicting Prostate Cancer Screening Best Practice**

Most clinical guidelines (for example, American Cancer Society and American Urological Association) recommend an informed decision making approach to prostate cancer screening. In this analysis, we defined best practice as always or almost always discussing the risks and benefits of prostate cancer screening when deciding whether to order PSA. Physician specialty was the only characteristic associated with best practice in our first model (see Table 73). Family practitioners were more likely to always discuss risks and benefits than internal medicine physicians. In an analysis including only male physicians, own screening status with PSA was also associated with best practice. Physicians who had not been screened with PSA were more likely to report always/almost always discussing risks and benefits with patients than physicians who have been screened with PSA.

#### Associations Between Selected Characteristics, PSA Screening Status, and Prostate Cancer Screening Informed Decision Making

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
<b>Specialty</b>			
Family/General Practice	155	REF	REF
Internal Medicine	78	0.39 (0.20 – 0.77)	.01
<b>Practice Type</b>			
Single Specialty	151	0.85 (0.42 – 1.71)	.65
Multiple Specialty	79	REF	REF
<b>Practice Location</b>			
Urban	186	REF	REF
Rural	47	0.94 (0.43 – 2.03)	.87
<b>Time Since Medical School</b>			
< 10 years	23	REF	REF
10 – 19 years	61	0.61 (0.19 – 1.97)	.41
20 – 29 years	82	2.57 (0.75 – 8.81)	.13
30+ years	66	1.39 (0.41 – 4.69)	.60
<b>Screened with PSA</b>			
Yes	120	REF	REF
No	113	2.37 (1.17 – 4.82)	.02

Note. Physicians were counted as using best practice if they indicated that they “Always or almost always” discussed the risks and benefits of PSA with patients prior to ordering the test. Adjusted odds ratios & p-values are from model including all characteristics. Only male physicians were included in this analysis.

## DISCUSSION

### Colon Cancer Screening

Most of the physicians surveyed recommend FOBT (93%) and colonoscopy (88%), but only about half of the physicians recommend these tests in accordance with USPSTF guidelines. The majority of physicians (76%) do offer at least one colon cancer screening test in accordance with USPSTF guidelines. This finding has two important implications. First, 24% of physicians are not offering any colon cancer screening tests appropriately. Second, those physicians that only recommend one test appropriately give their patients limited screening options, which may make them less likely to choose to get screened.<sup>2</sup>

Relatively few physicians use any device to ensure that home FOBT kits are returned. Since many patients do not use and return home FOBT kits,<sup>3</sup> one area for improvement would be encouraging physicians to adopt a system to encourage patients to complete and return FOBT kits. Several different approaches to encouraging patients to use FOBT home kits have been tested and show promise, including education conducted by primary care nurses,<sup>3</sup> sending letters signed by the primary care provider,<sup>4</sup> and mailing the FOBT kit prior to a primary care visit.<sup>5</sup>

Most physicians use one or more mechanisms to ensure that patients completed referred screening and follow-up tests with another provider. The most commonly cited mechanisms were having the test results returned to the physician’s office and making the appointment for the patient. Few physicians took more active approaches such as reminding the patient of the appointment by a telephone call (although it is possible that the performing physician’s office usually calls patients to remind them of their appointment).

Physicians were more likely to endorse patient anxiety and embarrassment about screening tests as a major barrier to colon cancer screening than any other barrier. Approximately 20 physicians wrote additional comments about this issue as a barrier to colon cancer screening. While patient anxiety about colon cancer screening is very salient to physicians, patient surveys suggest that this anxiety is not a major barrier for the majority. A significant proportion of patients will follow their doctor’s recommendation to get screened, particularly if they perceive that it is a strong recommendation.<sup>6</sup> Our analysis of the Washington Behavioral Risk Factor Surveillance System 2002 data showed that speaking with a physician about colon cancer screening was a significant predictor of having current screening.

We found few differences between physicians practicing in rural v. urban locations, and when there were differences rural physicians reported better practices. We had expected that rural physicians might perceive more system barriers to colon cancer screening, such as a shortage of doctors to perform endoscopy, but this was not the case. Urban and rural physicians were similar in their ratings of capacity barriers to colon cancer screening.

## **Prostate Cancer Screening**

Almost all of the physicians in our survey recommend screening for prostate cancer to their average risk, asymptomatic patients (90% recommend DRE and 83% recommend PSA). Most of the physicians (74%) report discussing the benefits and risks of prostate cancer screening when deciding whether to order PSA. Very few of the physicians use any tools, such as written materials or websites, to educate their patients about prostate cancer screening. It is also clear that many physicians' discussions do not include all of the controversial issues about prostate cancer screening, such as the side effects of prostate cancer treatment. The issues surrounding the controversy over prostate cancer screening are numerous and complex, while most clinic visits are short and often involve acute care issues. Therefore, putting educational tools in physicians' offices could be very helpful, both for the physicians and their patients. It is often difficult for patients to remember everything the doctor says during a clinic visit; written information that could be taken home, or a website that could be visited prior to a preventive care visit could improve patients' understanding of the issues and their participation in decision making.

Male physicians who have been screened with PSA are more likely to recommend PSA testing to their patients than male physicians who have not been screened with PSA. These physicians were also less likely to use informed decision making with their patients. Interventions to increase physicians' use of informed decision making could benefit from encouraging male physicians to be aware of their own prostate cancer screening status and how it may affect their discussions with their patients.

Only 55% of physicians collect family history information for prostate cancer for 75% or more of their male patients. As having a positive family history for prostate cancer is a significant risk for prostate cancer, this information should play a role in discussing benefits and risks of prostate cancer screening with patients. Physicians should be encouraged to collect family history of prostate cancer for all of their male patients.

## **Study Limitations**

There are several limitations to our survey. While we had an adequate sample size to assess the knowledge, attitudes, and practices of Washington physicians as a group, we did not have adequate power for some subgroup analyses. With only 68 rural physicians in the sample, we may not be able to generalize our findings to all rural physicians in the state. Similarly, since many of the physicians were under 50 years of age, we lost power in our analysis of whether physicians' colon cancer screening status is associated with their colon cancer screening practices.

The survey needed to be as brief as possible to maximize the response rate, so we were not able to ask all of the questions we would have liked. For example, we did not include any questions about screening practices for high-risk patients, which would have provided valuable information.



## Conclusions

We successfully achieved a high response rate for a physician survey. Physicians were randomly selected from a list of Washington primary care providers, giving us a representative sample of physicians in the state. We have obtained a great deal of information about physicians' knowledge, attitudes, and practices for two important cancer sites. With this baseline picture of state physicians, we can make several recommendations to the WA Comprehensive Cancer Control Partnership for physician interventions to improve colon cancer screening rates and prostate cancer informed decision making practices. A similar survey could be implemented on a regular basis (every 5 years) to measure the impact of WA CCCP activities.

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Table 1  
Physicians' Practice Settings

	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
Type of setting % (N)				
Single specialty	74.45% (169)	42.61% (49)	74.00% (37)	65.05% (255)
Multi-specialty	25.55% (58)	57.39% (66)	26.00% (13)	34.95% (137)
# of physicians in practice % (N)				
1	17.54% (40)	7.76% (9)	22.45% (11)	15.27% (60)
2 – 5	32.46% (74)	26.72% (31)	46.94% (23)	32.57% (128)
6 – 15	30.26% (69)	23.28% (27)	22.45% (11)	27.23% (107)
16 – 49	11.84% (27)	18.97% (22)	2.04% (1)	12.72% (50)
50 – 99	1.32% (3)	7.76% (9)	2.04% (1)	3.31% (13)
100+	6.58% (15)	15.52% (18)	4.08% (2)	8.91% (35)
Practice location % (N)				
Urban	80.79% (185)	84.48% (98)	88.46% (46)	82.87% (329)
Rural	19.21% (44)	15.52% (18)	11.54% (6)	17.13% (68)

Table 2  
Physicians' Patient Characteristics

	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
% of patients age > 50 (N)				
<25%	9.21% (21)	3.51% (4)	30.77% (16)	10.41% (41)
25 – 49%	53.51% (122)	8.77% (10)	59.62% (31)	41.37% (163)
50 – 74%	35.96% (82)	61.40% (70)	7.69% (4)	39.59% (156)
75 – 100%	1.32% (3)	26.32% (30)	1.92% (1)	8.63% (34)
% of patients female (N)				
<25%	0.44% (1)	5.22% (6)	0.00% (0)	1.78% (7)
25 – 49%	19.82% (45)	24.35% (28)	0.00% (0)	18.53% (73)
50 – 74%	66.96% (152)	53.04% (61)	9.62% (5)	55.33% (218)
75 – 100%	12.78% (29)	17.39% (20)	90.38% (47)	24.37% (96)

Table 3  
Physicians' Gender and Race/Ethnicity

	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
Gender % (N)				
Female	29.69% (68)	32.17% (37)	40.38% (21)	31.82% (126)
Male	70.31% (161)	67.83% (78)	59.62% (31)	68.18% (270)
Hispanic/Latino descent % (N)				
Yes	2.18% (5)	1.72% (2)	1.92% (1)	2.02% (8)
No	97.82% (224)	98.28% (114)	98.08% (51)	97.98% (389)
Race/Ethnicity % (N)				
American Indian/Alaska Native	1.33% (3)	0.89% (1)	0.00% (0)	1.03% (4)
Asian	10.18% (23)	11.61% (13)	7.69% (4)	10.26% (40)
African American	1.33% (3)	1.79% (2)	1.92% (1)	1.54% (6)
Pacific Islander	0.44% (1)	0.69% (1)	3.85% (2)	1.03% (4)
White	84.96% (192)	82.14% (92)	86.54% (45)	84.36% (329)
Other	2.65% (6)	3.57% (4)	0.00% (0)	2.56% (10)

Table 4  
Time Since Completing Medical School

	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
Less than 10 years % (N)	17.11% (39)	9.57% (11)	7.69% (4)	13.67% (54)
10 – 19 years % (N)	28.95% (66)	39.13% (45)	30.77% (16)	32.15% (127)
20 – 29 years % (N)	35.09% (80)	29.57% (34)	38.46% (20)	33.92% (134)
30 or more years % (N)	18.86% (43)	21.74% (25)	23.08% (12)	20.25% (80)

Table 5  
Physicians Over 50: Own Colon Ever Screening Rates

	Family Practice (N = 112)	Internal Medicine (N = 49)	Obstetrics/Gynecology (N = 30)	Total (N = 191)
FOBT % (N)	55.36% (62)	55.10% (27)	46.67% (14)	53.93% 103
Flexible sigmoidoscopy % (N)	15.18% (17)	16.33% (8)	23.33% (7)	16.75% (32)
Colonoscopy % (N)	44.64% (50)	51.02% (25)	46.67% (14)	46.60% (89)
Double contrast barium enema % (N)	1.79% (2)	4.08% (2)	3.33% (1)	2.62% (5)
Not screened % (N)	19.64% (22)	20.41% (10)	20.00% (6)	19.90% (38)

Note. Physicians could indicate more than one type of screening received, so columns sum to more than 100%.

Table 6  
Male Physicians: Own Ever Prostate Screening Rates

	Family Practice (N = 155)	Internal Medicine (N = 78)	Obstetrics/Gynecology (N = 31)	Total (N = 264)
Digital rectal examination % (N)	14.84% (23)	15.38% (12)	9.68% (3)	14.39% (38)
Prostate specific antigen % (N)	9.03% (14)	7.69% (6)	22.58% (7)	10.23% (27)
Both DRE and PSA % (N)	44.52% (69)	39.74% (31)	48.39% (15)	43.56% (115)
Unscreened % (N)	31.61% (49)	37.18% (29)	19.35% (6)	31.82% (84)

Table 7  
Physicians' Practice Settings

	Urban Practice (N = 329)	Rural Practice (N = 68)
Type of setting % (N)		
Single specialty	65.33 (211)	63.24 (43)
Multi-specialty	34.67 (112)	36.76 (25)
# of physicians in practice % (N)		
1	14.46 (47)	19.12 (13)
2 – 5	31.08 (101)	39.71 (27)
6 – 15	28.31 (92)	22.06 (15)
16 – 49	13.85 (45)	7.35 (5)
50 – 99	3.08 (10)	4.41 (3)
100+	9.23 (30)	7.35 (5)

Table 8  
Physicians' Patient Characteristics

	Urban Practice (N = 329)	Rural Practice (N = 68)
% of patients age > 50 (N)		
<25%	11.35 (37)	5.88 (4)
25 – 49%	45.40 (148)	22.06 (15)
50 – 74%	36.81 (120)	52.94 (36)
75 – 100%	6.44 (21)	19.12 (13)
% of patients female (N)		
<25%	2.15 (7)	0.00 (0)
25 – 49%	19.63 (64)	13.24 (9)
50 – 74%	52.45 (171)	69.12 (47)
75 – 100%	25.77 (84)	17.65 (12)

Table 9  
Physicians' Gender and Race/Ethnicity

	Urban Practice (N = 329)	Rural Practice (N = 68)
Gender % (N)		
Female	32.93 (108)	26.47 (18)
Male	67.07 (220)	73.53 (50)
Hispanic/Latino descent % (N)		
Yes	2.13 (7)	1.47 (1)
No	97.87 (322)	98.53 (67)
Race/Ethnicity % (N)		
American Indian/Alaska Native	0.96 (3)	1.47 (1)
Asian	11.86 (37)	4.41 (3)
African American	1.60 (3)	1.47 (1)
Pacific Islander	0.96 (3)	1.47 (1)
White	84.62 (264)	91.18 (62)
Other	3.21 (10)	0.00 (0)

Table 10  
Time Since Completing Medical School

	Urban Practice (N = 329)	Rural Practice (N = 68)
Less than 10 years % (N)	13.76 (45)	13.24 (9)
10 – 19 years % (N)	32.11 (105)	32.35 (22)
20 – 29 years % (N)	33.33 (109)	36.76 (25)
30 or more years % (N)	20.80 (68)	17.65 (12)

Table 11

Physicians Over 50: Own Colon Cancer Ever Screening Rates

	Urban Practice (N = 156)	Rural Practice (N = 35)
FOBT % (N)	53.21 (83)	57.14 (20)
Flexible sigmoidoscopy % (N)	17.31 (27)	14.29 (5)
Colonoscopy % (N)	46.79 (73)	45.71 (16)
Double contrast barium enema % (N)	2.56 (4)	2.86 (1)
Not screened % (N)	19.23 (30)	22.86 (8)

Note. Physicians could indicate more than one type of screening received, so columns sum to more than 100%.

Table 12

Male Physicians: Own Ever Prostate Screening Rates

	Urban Practice (N = 214)	Rural Practice (N = 50)
Digital rectal examination % (N)	14.02 (30)	16.00 (8)
Prostate specific antigen % (N)	10.75 (23)	8.00 (4)
Both DRE and PSA % (N)	41.12 (88)	54.00 (27)
Unscreened % (N)	34.11 (73)	22.00 (11)



Table 13  
Physician Recommendations for FOBT

	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
% Recommending FOBT (CI)	93.78% (89.75 – 96.29)	91.15% (84.29 – 95.18)	90.20% (78.45 – 95.88)	92.54% (89.46 – 94.78)
Mean start age (SD)	46.74 (5.03)	47.29 (5.36)	45.73 (6.83)	46.55 (5.94)
Mean test interval (SD)	1.16 (0.38)	1.12 (0.35)	1.32 (1.14)	1.17 (0.53)
% of physicians in sample recommending FOBT in agreement with USPSTF guidelines (CI)	54.98% (48.18 – 61.59)	66.99% (57.33 – 75.40)	52.17% (33.90 – 62.10)	58.06% (52.87 – 63.07)

Note. CI = 95% confidence interval. Physicians were counted as in agreement with guidelines if they selected 50 as starting age and 1 year as appropriate screening interval.

Table 14  
Physician Recommendations for Flexible Sigmoidoscopy

	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
% Recommending Flexible Sig. (CI)	59.56% (52.99 – 65.80)	50.46% (41.13 – 59.76)	51.06% (37.01 – 64.95)	55.91% (50.86 – 60.84)
Mean start age (SD)	50.04 (2.65)	49.00 (2.79)	50.00 (2.13)	49.77 (2.63)
Mean test interval (SD)	5.78 (2.08)	5.46 (1.91)	5.14 (1.84)	5.36 (3.49)
% of physicians in sample recommending flexible sig. in agreement with USPSTF guidelines (CI)	46.27% (37.98 – 54.77)	56.36% (43.06 – 68.81)	45.83% (27.42 – 65.46)	48.83% (42.15 – 55.55)

Note. CI = 95% confidence interval. Physicians were counted as in agreement with guidelines if they selected 50 as starting age and 5 years as appropriate screening interval.

Table 15  
Physician Recommendations for Colonoscopy

	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
% Recommending Colonoscopy (CI)	86.28% (81.13 – 90.20)	92.24% (85.72 – 95.93)	86.27% (73.83 – 93.33)	88.04% (84.43 – 90.91)
Mean start age (SD)	50.69 (3.06)	49.86 (4.31)	50.47 (2.85)	50.36 (3.49)
Mean test interval (SD)	8.52 (2.25)	8.93 (1.85)	7.35 (2.70)	8.48 (2.24)
% of physicians in sample recommending colonoscopy in agreement with USPSTF guidelines (CI)	57.44% (50.36 – 64.22)	64.49% (54.96 – 72.99)	34.09% (21.67 – 49.17)	56.65% (51.35 – 61.80)

Note. CI = 95% confidence interval. Physicians were counted as in agreement with guidelines if they selected 50 as starting age and 10 years as appropriate screening interval.

Table 16  
Physicians' Performance of FOBT

	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
% perform FOBT (CI)	92.54% (88.31 – 95.32)	89.57% (82.48 – 93.99)	82.69% (69.90 – 90.77)	90.38% (87.04 – 92.93)
% performing FOBT w/ mechanism to ensure kit return (CI)	37.50% (31.16 – 44.30)	35.92% (27.23 – 45.65)	33.33% (20.79 – 48.78)	36.54% (31.66 – 41.72)
What is mechanism? % (N)				
Telephone call	22.08 % (17)	24.32% (9)	50.00% (7)	25.78% (33)
Mail reminder	24.68% (19)	21.62% (8)	35.71% (5)	25.00% (32)
Chart reminder	61.04% (47)	45.95% (17)	35.71% (5)	53.91% (69)
Other	16.88% (13)	27.03% (10)	21.43% (3)	20.31% (26)
Initial follow-up for positive FOBT % (N)				
Repeat FOBT	22.27% (47)	26.21% (27)	37.21% (16)	25.21% (90)
Colonoscopy	92.42% (195)	86.41% (89)	83.72% (36)	89.64% (320)
DCBE	8.53% (18)	6.80% (7)	9.30% (4)	8.12% (29)
Other	7.11 % (15)	1.94% (2)	11.63% (5)	6.16% (22)

Note. CI = 95% confidence interval. Columns for “what is the mechanism” and initial follow-up for positive FOBT sum to more than 100% because physicians could select multiple choices. “Other” mechanisms included flow charts and electronic medical records. A couple of doctors also said they did in-office FOBT, so no worries about completing test. “Other” follow-up for positive FOBT mainly CBC.

Table 17  
Physicians' Performance of Flexible Sigmoidoscopy

	Family Practice (N = 229)	Internal Medicine (N = 116)	Total (N = 345)
% perform Flexible Sig. (CI)	25.89% (20.56 – 32.05)	18.42% (12.31 – 26.65)	20.31% (16.59 – 24.62)
Action taken if small polyp % (CI)			
Take biopsy	75.86% (63.21 – 85.18)	65.00% (42.47 – 82.37)	73.08% (62.15 – 81.77)
Refer for excision	24.14% (14.82 – 36.79)	35.00% (17.63 – 57.53)	26.92% (18.23 – 37.85)
Initial follow-up for positive Flexible Sigmoidoscopy % (N)			
FOBT	3.45% (2)	9.51% (2)	5.06% (4)
Colonoscopy	100.00% (58)	95.24% (20)	98.73% (78)
DCBE	1.72% (1)	0.00% (0)	1.27% (1)

Note. CI = 95% confidence interval. No Ob/Gynecologists reported performing flexible sigmoidoscopy. Columns for initial follow-up for positive flexible sigmoidoscopy sum to more than 100% because physicians could select multiple choices.

Table 18  
Physicians' Performance of Colonoscopy

	Family Practice (N = 229)	Internal Medicine (N = 116)	Total (N = 345)
% perform Colonoscopy (CI)	3.98% (2.08 – 7.49)	5.22% (2.35 – 11.16)	3.82% (2.31 – 6.25)
Initial follow-up for positive Colonoscopy % (N)			
Repeat Colonoscopy to monitor polyps	77.78% (7)	100.00% (6)	86.67% (13)

Note. CI = 95% confidence interval. No Ob/Gynecologists reported performing colonoscopy.

Table 19

Referral to Other Providers for Colon Screening and Follow-up Tests

	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
% w/ mechanism to ensure referred tests completed (CI)	68.30% (61.90 – 74.09)	61.06% (51.75 – 69.03)	56.86% (43.04 – 69.69)	64.69% (59.78 – 69.31)
What is mechanism? % (N)				
Reminder telephone call	19.61% (30)	15.94% (11)	17.24% (5)	18.33% (46)
Reminder by mail	13.73% (21)	13.04% (9)	10.34% (3)	13.15% (33)
Make appt. for patient	50.98% (78)	47.83% (33)	51.72% (15)	50.20% (126)
Results returned to office	72.55% (111)	71.01% (49)	75.86% (22)	72.51% (182)
Office notified if not completed	13.07% (20)	15.94% (11)	6.90% (2)	13.15% (33)
Discuss at next visit	1.96% (3)	2.90% (2)	10.34% (3)	3.19% (8)
Other	13.07% (20)	10.14% (7)	10.34% (3)	11.95% (30)

Note. CI = 95% confidence interval. Columns for mechanism type sum to more than 100% because physicians could select multiple choices. “Other” mechanisms mainly included referral services’ notification if patient does not complete test and electronic medical records.

Table 20

Physicians’ Comparison of Cancer Screening Interventions: % Rating Site as Very Important

	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
Breast % (CI)	96.44% (93.03 – 98.22)	93.10% (86.78 – 96.52)	96.15% (85.81 – 99.04)	95.42% (92.84 – 97.10)
Cervical % (CI)	89.33% (84.56 – 92.76)	77.59% (69.07 – 84.29)	96.15% (85.81 – 99.04)	86.77% (83.03 – 89.79)
Colorectal % (CI)	90.58% (85.97 – 93.79)	93.97% (87.85 – 97.11)	65.38% (51.56 – 77.02)	88.24% (84.63 – 91.08)
Prostate % (CI)	62.22% (55.68 – 68.34)	54.78% (45.59 – 63.66)	----	59.71% (54.38 – 64.81)

Note. CI = 95% confidence interval.

Table 21

Physicians' Perceptions of **Patient Barriers** to Colon Cancer Screening: Percent Perceiving as Major Barrier (Minor Barrier %)

	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
Fear of finding cancer	23.01% (66.81%)	13.79 % (75.00%)	19.23% (63.46%)	19.80% (68.78%)
Believes screening not effective	1.77% (42.92%)	6.90% (37.07%)	1.96% (54.90%)	3.31% (42.75%)
Embarrassment/anxiety about tests	61.50% (31.86%)	54.39% (40.35%)	73.08% (23.08%)	60.97% (33.16%)
Unaware of screening or colon cancer as a health threat	40.27% (51.77%)	40.00% (51.30%)	53.85% (36.54%)	41.98% (49.62%)

Note. Physicians could also rate each item as “not a barrier” so percentages within cells do not sum to 100%.

Table 22

Physicians' Perceptions of **Provider/System Barriers** to Colon Cancer Screening: Percent Perceiving as Major Barrier (Minor Barrier %)

	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
Screening costs too much/insurance does not cover	50.67% (33.33%)	50.00% (31.90%)	46.15% (38.46%)	49.87% (33.59%)
Doctors do not actively recommend screening	17.70% (44.25%)	15.79% (51.75%)	34.62% (36.54%)	16.39% (45.51%)
Shortage of doctors to do screening other than FOBT	16.37% (44.69%)	20.00% (36.52%)	11.54% (44.23%)	16.79% (42.24%)
Shortage of doctors to conduct invasive follow-up	18.39% (38.57%)	19.13% (34.78%)	12.00% (38.00%)	17.78% (37.37%)
Other barriers	10.66%	10.34%	9.62%	10.43%

Note. Physicians could also rate each item as “not a barrier” so percentages within cells do not sum to 100%. “Other” barriers focused on patient fear/anxiety of screening tests; a few doctors mentioned time constraints (both during office visit and in patients' life) and cost barriers.

Table 23  
Physicians' Collection of Family History of Colon Cancer

Proportion of patients family history collected % (CI)	Family Practice (N = 229)	Internal Medicine (N = 116)	Obstetrics/Gynecology (N = 52)	Total (N = 397)
Between 0-25%	13.57% (9.64 – 18.78)	9.48% (5.32 – 16.35)	13.46% (6.53 – 25.71)	12.34% (9.41 – 16.01)
Between 25-50%	8.14% (5.18 – 12.58)	7.76% (4.07 – 14.28)	3.85% (0.96 – 14.19)	7.46% (5.22 – 10.54)
Between 50-75%	17.65% (13.15 – 23.27)	12.93% (7.93 – 20.38)	7.69% (2.91 – 18.84)	14.91% (11.69 – 18.82)
75% or more	60.63% (54.01 – 66.88)	69.83% (60.85 – 77.51)	75.00% (61.50 – 84.93)	65.30% (60.41 – 69.88)

Table 24  
Physician Recommendations for FOBT

	Urban Practice (N = 329)	Rural Practice (N = 68)
% Recommending FOBT (CI)	91.95 (88.42 – 94.47)	95.45 (86.78 – 98.53)
Mean start age (SD)	46.86 (5.29)	46.37 (5.83)
Mean test interval (SD)	1.20 (0.58)	1.04 (0.16)
% of physicians recommending FOBT in agreement with USPSTF guidelines (N)*	56.90 (169)	63.49 (40)

Note. CI = 95% confidence interval. \*Physicians recommending FOBT were counted as in agreement if they selected 50 as starting age and 1 year as appropriate screening interval.

Table 25  
Physician Recommendations for Flexible Sigmoidoscopy

	Urban Practice (N = 329)	Rural Practice (N = 68)
% Recommending Flexible Sig. (CI)	56.19 (50.63 – 61.60)	54.55 (42.45 – 66.13)
Mean start age (SD)	49.77 (2.62)	49.72 (2.91)
Mean test interval (SD)	5.74 (2.09)	5.13 (1.52)
% of physicians recommending flexible sig. in agreement with USPSTF guidelines (N)*	48.02 (85)	52.77 (19)

Note. CI = 95% confidence interval. \* Physicians recommending flexible sigmoidoscopy were counted as in agreement if they selected 50 as starting age and 5 years as appropriate screening interval.



Table 26  
Physician Recommendations for Colonoscopy

	Urban Practice (N = 329)	Rural Practice (N = 68)
% Recommending Colonoscopy (N)	86.81 (82.66 – 90.08)	94.03 (85.09 – 97.75)
Mean start age (SD)	50.18 (3.43)	51.35 (3.62)
Mean test interval (SD)	8.43 (2.31)	8.85 (1.84)
% of physicians recommending colonoscopy in agreement with USPSTF guidelines (N)*	56.54 (160)	57.14 (36)

Note. CI = 95% confidence interval. \*Physicians recommending colonoscopy were counted as in agreement if they selected 50 as starting age and 10 years as appropriate screening interval.

Table 27  
Physicians' Performance of FOBT

	Urban Practice (N = 329)	Rural Practice (N = 68)
% perform FOBT (CI)	89.63 (85.82 – 92.51)	94.03 (85.09 – 97.75)
% performing FOBT w/ mechanism to ensure kit return (CI)	34.02 (28.78 – 39.68)	48.39 (36.24 – 60.72)
What is mechanism? % (N)		
Telephone call	27.27 (27)	20.00 (6)
Mail reminder	29.29 (29)	10.00 (11)
Chart reminder	50.51 (50)	63.33 (19)
Other	21.21 (21)	16.67 (5)
Initial follow-up for positive FOBT % (N)		
Repeat FOBT	24.49 (72)	28.57 (18)
Colonoscopy	89.12 (262)	92.06 (58)
DCBE	7.82 (23)	9.52 (6)
Other	5.78 (17)	7.94 (5)

Note. CI = 95% confidence interval. Columns for “what is the mechanism” and initial follow-up for positive FOBT sum to more than 100% because physicians could select multiple choices. “Other” mechanisms included flow charts and electronic medical records. A couple of doctors also said they did in-office FOBT, so no worries about completing test. “Other” follow-up for positive FOBT mainly CBC.

Table 28  
Physicians' Performance of Flexible Sigmoidoscopy

	Urban Practice (N = 329)	Rural Practice (N = 68)
% perform Flexible Sig. (CI)	19.31 (15.34 – 24.02)	25.00 (16.11 – 36.65)
Action taken if small polyp % (CI)		
Take biopsy	68.85 (56.19 – 79.21)	88.24 (63.02 – 97.06)
Refer for excision	31.15 (20.79 – 43.81)	11.76 (2.94 – 36.98)
Initial follow-up for positive Flexible Sigmoidoscopy % (N)		
FOBT	4.83 (31)	5.88 (1)
Colonoscopy	96.77 (60)	94.12 (16)
DCBE	0.00 (0)	5.88 (1)

Note. CI = 95% confidence interval. Columns for initial follow-up for positive flexible sigmoidoscopy sum to more than 100% because physicians could select multiple choices.

Table 29  
Physicians' Performance of Colonoscopy

	Urban Practice (N = 329)	Rural Practice (N = 68)
% perform Colonoscopy (CI)	3.69 (2.10 – 6.40)	4.41 (1.42 – 12.86)
Initial follow-up for positive Colonoscopy % (N)		
Repeat Colonoscopy to monitor polyps	91.67 (11)	100.00 (3)

Note. CI = 95% confidence interval. Columns for initial follow-up for positive colonoscopy sum to more than 100% because physicians could select multiple choices.

Table 30  
Referral to Other Providers for Colon Screening and Follow-up Tests

	Urban Practice (N = 329)	Rural Practice (N = 68)
% w/ mechanism to ensure referred tests completed (CI)	63.04 (57.61 – 68.16)	72.73 (60.75 – 82.13)
What is mechanism? % (N)		
Reminder telephone call	14.78 (30)	33.33 (16)
Reminder by mail	13.79 (28)	10.42 (5)
Make appt. for patient	45.81 (93)	68.75 (33)
Results returned to office	71.92 (146)	75.00 (36)
Office notified if not completed	12.81 (26)	14.58 (7)
Discuss at next visit	3.45 (7)	2.08 (1)
Other	13.30 (27)	6.25 (3)

Note. CI = 95% confidence interval. Columns for mechanism type sum to more than 100% because physicians could select multiple choices. “Other” mechanisms mainly included referral services’ notification if patient does not complete test and electronic medical records.

Table 31  
Physicians' Comparison of Cancer Screening Interventions: % Rating Site as Very Important

	Urban Practice (N = 329)	Rural Practice (N = 68)
Breast % (CI)	95.08 (92.10 – 96.97)	97.06 (88.93 – 99.27)
Cervical % (CI)	86.46 (82.47 – 89.78)	88.24 (78.14 – 94.02)
Colorectal % (CI)	89.20 (85.31 – 92.15)	83.58 (72.68 – 90.69)
Prostate % (CI)	57.98 (52.36 – 63.40)	68.18 (56.02 – 78.29)

Table 32

Physicians' Perceptions of **Patient Barriers** to Colon Cancer Screening: Percent Perceiving as Major Barrier (Minor Barrier %)

	Urban Practice (N = 329)	Rural Practice (N = 68)
Fear of finding cancer	19.02 (68.71)	23.53 (69.12)
Believes screening not effective	3.68 (42.02)	1.49 (46.27)
Embarrassment/anxiety about tests	61.11 (32.72)	60.29 (35.29)
Unaware of screening or colon cancer as a health threat	42.77 (48.62)	38.24 (54.41)

Note. Physicians could also rate each item as “not a barrier” so percentages within cells do not sum to 100%.

Table 33

Physicians' Perceptions of **Provider/System Barriers** to Colon Cancer Screening: Percent Perceiving as Major Barrier (Minor Barrier %)

	Urban Practice (N = 329)	Rural Practice (N = 68)
Screening costs too much/insurance does not cover	46.77 (35.69)	64.71 (23.53)
Doctors do not actively recommend screening	19.08 (45.27)	20.90 (46.27)
Shortage of doctors to do screening other than FOBT	17.85 (40.00)	11.76 (52.94)
Shortage of doctors to conduct invasive follow-up	18.75 (36.25)	13.24 (42.65)
Other barriers	11.08	5.80

Note. Physicians could also rate each item as “not a barrier” so percentages within cells do not sum to 100%. “Other” barriers focused on patient fear/anxiety of screening tests; a few doctors mentioned time constraints (both during office visit and in patients' life) and cost barriers.

Table 34

Physicians' Collection of Family History of Colon Cancer

Proportion of patients family history collected % (CI)	Urban Practice (N = 329)	Rural Practice (N = 68)
Between 0-25%	11.46 (8.40 – 15.43)	16.67 (9.45 – 27.70)
Between 25-50%	7.12 (4.77 – 10.50)	9.09 (4.13 – 18.85)
Between 50-75%	16.41 (12.74 – 20.88)	7.58 (3.18 – 17.00)
75% or more	65.02 (59.63 – 70.04)	66.67 (54.47 – 76.98)

Table 35  
Physician Recommendations for FOBT

	Screened (N = 158)	Unscreened (N = 39)
% Recommending FOBT (CI)	93.04 (87.84 – 96.11)	94.87 (81.59 – 98.72)
Mean start age (SD)	44.70 (7.03)	45.76 (7.70)
Mean test interval (SD)	1.14 (0.33)	1.35 (1.13)
% of physicians in sample recommending FOBT in agreement with USPSTF guidelines (CI)*	42.18 (34.43 – 50.33)	59.46 (43.14 – 73.92)

Note. CI = 95% confidence interval. This analysis only included physicians 50 years of age and older. \*Physicians were counted as in agreement if they selected 50 as starting age and 1 year as appropriate screening interval.

Table 36  
Physician Recommendations for Flexible Sigmoidoscopy

	Screened (N = 160)	Unscreened (N = 39)
% Recommending Flexible Sig. (CI)	50.65 (42.77 – 58.50)	61.54 (45.57 – 75.36)
Mean start age (SD)	49.42 (3.22)	50.00 (1.51)
Mean test interval (SD)	5.41 (1.93)	6.22 (2.31)
% of physicians in sample recommending flexible sig. in agreement with USPSTF guidelines (CI)*	48.72 (37.82 – 59.74)	37.50 (20.74 – 57.91)

Note. CI = 95% confidence interval. This analysis only included physicians 50 years of age and older. \* Physicians were counted as in agreement if they selected 50 as starting age and 5 years as appropriate screening interval.

Table 37  
Physician Recommendations for Colonoscopy

	Screened (N = 158)	Unscreened (N = 39)
% Recommending Colonoscopy (CI)	89.24 (83.34 – 93.22)	82.05 (66.79 – 91.22)
Mean start age (SD)	50.50 (2.97)	49.84 (2.03)
Mean test interval (SD)	7.97 (2.45)	8.71 (1.92)
% of physicians in sample recommending colonoscopy in agreement with USPSTF guidelines (CI)*	47.52 (39.38 – 55.79)	62.50 (44.82 – 77.37)

Note. CI = 95% confidence interval. This analysis only included physicians 50 years of age and older. \*Physicians were counted as in agreement if they selected 50 as starting age and 10 years as appropriate screening interval.

Table 38  
Physicians' Performance of FOBT

	Screened (N = 159)	Unscreened (N = 39)
% perform FOBT (CI)	91.20 (85.65 – 94.73)	87.18 (72.60 – 94.58)
% performing FOBT w/ mechanism to ensure kit return (CI)	41.96 (34.12 – 50.23)	33.33 (19.47 – 50.84)

Note. CI = 95% confidence interval. This analysis only included physicians 50 years of age and older.

Table 39  
Physicians' Comparison of Cancer Screening Interventions: % Rating Site as Very Important

	Screened (N = 157)	Unscreened (N = 38)
Breast % (CI)	96.82 (92.55 – 98.67)	94.74 (81.16 – 98.69)
Cervical % (CI)	85.35 (78.89 – 90.08)	84.21 (68.96 – 92.75)
Colorectal % (CI)	87.82 (81.66 – 92.11)	84.21 (68.96 – 92.75)
Prostate % (CI)	70.47 (62.63 – 77.26)	63.89 (47.19 – 77.79)

Note. CI = 95% confidence interval. This analysis only included physicians 50 years of age and older.

Table 40

Physicians' Perceptions of **Patient Barriers** to Colon Cancer Screening: Percent Perceiving as Major Barrier (Minor Barrier %)

	Screened (N = 159)	Unscreened (N = 39)
Fear of finding cancer	24.84% (64.33%)	15.79% (65.79%)
Believes screening not effective	3.21% (44.23%)	2.63% (47.37%)
Embarrassment/anxiety about tests	54.43% (36.08%)	65.79% (28.95%)
Unaware of screening or colon cancer as a health threat	35.03% (56.05%)	50.00% (39.47%)

Note. Physicians could also rate each item as “not a barrier” so percentages within cells do not sum to 100%. This analysis only included physicians 50 years of age and older.

Table 41

Physicians' Perceptions of **Provider/System Barriers** to Colon Cancer Screening: Percent Perceiving as Major Barrier (Minor Barrier %)

	Screened (N = 159)	Unscreened (N = 39)
Screening costs too much/insurance does not cover	52.53% (30.38%)	50.00% (23.68%)
Doctors do not actively recommend screening	17.95% (45.51%)	5.26% (50.00%)
Shortage of doctors to do screening other than FOBT	13.29% (41.77%)	15.79% (55.26%)
Shortage of doctors to conduct invasive follow-up	16.03% (37.18%)	16.67% (36.11%)

Note. Physicians could also rate each item as “not a barrier” so percentages within cells do not sum to 100%. This analysis only included physicians 50 years of age and older.

Table 42

Physicians' Collection of Family History of Colon Cancer

Proportion of patients family history collected % (CI)	Screened (N = 159)	Unscreened (N = 39)
Between 0-25%	13.46 (8.93 – 19.80)	23.68 (12.77 – 39.67)
Between 25-50%	10.26 (6.37 – 16.12)	5.26 (1.31 – 18.84)
Between 50-75%	13.46 (8.93 – 19.80)	13.16 (5.56 – 28.04)
75% or more	62.82 (54.95 – 70.07)	57.89 (41.87 – 72.42)

Note. CI = 95% confidence interval. This analysis only included physicians 50 years of age and older.

Table 43

Associations Between Selected Characteristics and Any Colon Screening Best Practice

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
Specialty			
Family/General Practice	229	REF	REF
Internal Medicine	116	1.65 (0.90 – 3.03)	.10
Obstetrics/Gynecology	52	0.71 (0.34 – 1.48)	.36
Practice Type			
Single Specialty	254	0.83 (0.48 – 1.43)	.50
Multiple Specialty	137	REF	REF
Practice Location			
Urban	329	REF	REF
Rural	68	2.04 (0.97 – 4.28)	.06
Physician Sex			
Male	270	REF	REF
Female	126	2.07 (1.08 – 3.96)	.03
Time Since Medical School			
< 10 years	54	REF	REF
10 – 19 years	127	0.62 (0.24 – 1.59)	.32
20 – 29 years	134	0.59 (0.24 – 1.48)	.26
30+ years	80	0.33 (0.13 – 0.86)	.02

Note. Physicians were counted as using best practice if they indicated that they recommended one or more colon cancer screening tests in accordance with national guidelines. 76.32% of the physicians in this analysis were counted as using best practice. Adjusted odds ratios & p-values are from model including all characteristics.



Table 44

Associations Between Selected Characteristics and FOBT Best Practice

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
Specialty			
Family/General Practice	229	REF	REF
Internal Medicine	116	1.48 (0.90 – 2.42)	.12
Obstetrics/Gynecology	52	0.79 (0.41 – 1.54)	.49
Practice Type			
Single Specialty	254	0.93 (0.59 – 1.47)	.75
Multiple Specialty	137	REF	REF
Practice Location			
Urban	329	REF	REF
Rural	68	1.41 (0.81 – 2.46)	0.22
Physician Sex			
Male	270	REF	REF
Female	126	1.75 (1.08 – 2.83)	.02
Time Since Medical School			
< 10 years	54	REF	REF
10 – 19 years	127	1.03 (0.52 – 2.03)	.94
20 – 29 years	134	0.76 (0.38 – 1.50)	.42
30+ years	80	0.52 (0.24 – 1.10)	.09

Note. Physicians were counted as using best practice if they indicated that they recommended starting FOBT at age 50 and testing every year. 52.64% of the physicians in this analysis were counted as using best practice. Adjusted odds ratios & p-values are from model including all characteristics.

Table 45

Associations Between Selected Characteristics and Flexible Sigmoidoscopy Best Practice

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
Specialty			
Family/General Practice	229	REF	REF
Internal Medicine	116	0.88 (0.51 – 1.52)	.65
Obstetrics/Gynecology	52	0.64 (0.30 – 1.38)	.25
Practice Type			
Single Specialty	254	0.82 (0.50 – 1.35)	.44
Multiple Specialty	137	REF	REF
Practice Location			
Urban	329	REF	REF
Rural	68	1.08 (0.60 – 1.97)	.79
Physician Sex			
Male	270	REF	REF
Female	126	1.30 (0.77 – 2.20)	.32
Time Since Medical School			
< 10 years	54	REF	REF
10 – 19 years	127	1.55 (0.70 – 3.42)	.28
20 – 29 years	134	1.66 (0.75 – 3.67)	.21
30+ years	80	1.21 (0.48 – 3.04)	.68

Note. Physicians were counted as using best practice if they indicated that they recommended starting flexible sigmoidoscopy at age 50 and testing every 5 years. 26.20% of the physicians in this analysis were counted as using best practice. Adjusted odds ratios & p-values are from model including all characteristics.

Table 46

Associations Between Selected Characteristics and Colonoscopy Best Practice

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
<b>Specialty</b>			
Family/General Practice	229	REF	REF
Internal Medicine	116	1.54 (0.94 – 2.54)	.09
Obstetrics/Gynecology	52	0.40 (0.19 – 0.82)	.01
<b>Practice Type</b>			
Single Specialty	254	0.82 (0.52 – 1.30)	.40
Multiple Specialty	137	REF	REF
<b>Practice Location</b>			
Urban	329	REF	REF
Rural	68	1.17 (0.67 – 2.06)	.57
<b>Physician Sex</b>			
Male	270	REF	REF
Female	126	1.98 (1.21 – 3.25)	.01
<b>Time Since Medical School</b>			
< 10 years	54	REF	REF
10 – 19 years	127	0.43 (0.21 – 0.88)	.02
20 – 29 years	134	0.74 (0.36 – 1.49)	.39
30+ years	80	0.43 (0.20 – 0.95)	.04

Note. Physicians were counted as using best practice if they indicated that they recommended starting colonoscopy at age 50 and testing every 10 years. 49.37% of the physicians in this analysis were counted as using best practice. Adjusted odds ratios & p-values are from model including all characteristics.

Table 47

Associations Between Selected Characteristics, Screening Status, and Any Colon Screening Best Practice

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
Specialty			
Family/General Practice	112	REF	REF
Internal Medicine	49	2.37 (0.98 – 5.75)	.06
Obstetrics/Gynecology	30	0.95 (0.39 – 2.32)	.91
Practice Type			
Single Specialty	125	0.46 (0.21 – 1.01)	.05
Multiple Specialty	63	REF	REF
Practice Location			
Urban	156	REF	REF
Rural	35	1.78 (0.71 – 4.48)	.22
Physician Sex			
Male	156	REF	REF
Female	35	1.35 (0.54 – 3.35)	.52
Screened for Colon Cancer			
Yes	153	REF	REF
No	38	1.76 (0.72 – 4.31)	.21

Note. Physicians were counted as using best practice if they indicated that they recommended one or more colon cancer screening tests in accordance with national guidelines. 68.59% of the physicians in this analysis were counted as using best practice. Adjusted odds ratios & p-values are from model including all characteristics. Only physicians ages 50 and older were included in this analysis.

Table 48

Associations Between Selected Characteristics, Screening Status, and FOBT Best Practice

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
<b>Specialty</b>			
Family/General Practice	112	REF	REF
Internal Medicine	49	1.45 (0.70 – 3.01)	.32
Obstetrics/Gynecology	30	0.88 (0.37 – 2.12)	.78
<b>Practice Type</b>			
Single Specialty	125	0.97 (0.49 – 1.91)	.93
Multiple Specialty	63	REF	REF
<b>Practice Location</b>			
Urban	156	REF	REF
Rural	35	0.98 (0.45 – 2.13)	.97
<b>Physician Sex</b>			
Male	156	REF	REF
Female	35	1.05 (0.49 – 2.26)	.90
<b>Screened for Colon Cancer</b>			
Yes	153	REF	REF
No	38	0.52 (0.25 – 1.08)	.08

Note. Physicians were counted as using best practice if they indicated that they recommended starting FOBT at age 50 and testing every year. 42.93% of the physicians in this analysis were counted as using best practice. Adjusted odds ratios & p-values are from model including all characteristics. Only physicians ages 50 and older were included in this analysis.

Table 49

Associations Between Selected Characteristics, Screening Status, and Flexible Sigmoidoscopy Best Practice

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
<b>Specialty</b>			
Family/General Practice	112	REF	REF
Internal Medicine	49	0.88 (0.38 – 2.06)	.77
Obstetrics/Gynecology	30	0.57 (0.20 – 1.64)	.30
<b>Practice Type</b>			
Single Specialty	125	0.73 (0.35 – 1.52)	.40
Multiple Specialty	63	REF	REF
<b>Practice Location</b>			
Urban	156	REF	REF
Rural	35	1.32 (0.56 – 3.11)	.52
<b>Physician Sex</b>			
Male	156	REF	REF
Female	35	1.91 (0.84 – 4.33)	.12
<b>Screened for Colon Cancer</b>			
Yes	153	REF	REF
No	38	0.85 (0.35 – 2.04)	.71

Note. Physicians were counted as using best practice if they indicated that they recommended starting flexible sigmoidoscopy at age 50 and testing every 5 years. 23.56% of the physicians in this analysis were counted as using best practice. Adjusted odds ratios & p-values are from model including all characteristics. Only physicians ages 50 and older were included in this analysis.

Table 50

Associations Between Selected Characteristics, Screening Status, and Colonoscopy Best Practice

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
<b>Specialty</b>			
Family/General Practice	112	REF	REF
Internal Medicine	49	1.84 (0.89 – 3.81)	.10
Obstetrics/Gynecology	30	0.73 (0.29 – 1.81)	.49
<b>Practice Type</b>			
Single Specialty	125	0.52 (0.26 – 1.01)	.06
Multiple Specialty	63	REF	REF
<b>Practice Location</b>			
Urban	156	REF	REF
Rural	35	1.62 (0.74 – 3.53)	.23
<b>Physician Sex</b>			
Male	156	REF	REF
Female	35	1.83 (0.81 – 4.14)	.14
<b>Screened for Colon Cancer</b>			
Yes	153	REF	REF
No	38	1.39 (0.64 – 3.02)	.40

Note. Physicians were counted as using best practice if they indicated that they recommended starting colonoscopy at age 50 and testing every 10 years. 44.50% of the physicians in this analysis were counted as using best practice. Adjusted odds ratios & p-values are from model including all characteristics. Only physicians ages 50 and older were included in this analysis.

Table 51

Associations Between Selected Characteristics and Using a Follow-up Mechanism to Ensure Return of FOBT Kits

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
Specialty			
Family/General Practice	229	REF	REF
Internal Medicine	116	1.17 (0.68 – 2.00)	.57
Obstetrics/Gynecology	52	0.82 (0.39 – 1.70)	.59
Practice Type			
Single Specialty	254	1.76 (1.05 – 2.95)	.03
Multiple Specialty	137	REF	REF
Practice Location			
Urban	329	REF	REF
Rural	68	1.94 (1.09 – 3.44)	.02
Physician Sex			
Male	270	REF	REF
Female	126	1.14 (0.67 – 1.93)	.62
Time Since Medical School			
< 10 years	54	REF	REF
10 – 19 years	127	1.29 (0.60 – 2.81)	.51
20 – 29 years	134	2.22 (1.05 – 4.71)	.04
30+ years	80	2.69 (1.16 – 6.25)	.02

Note. 36.54% of physicians reported using a mechanism to ensure FOBT kit return. Adjusted odds ratios & p-values are from model including all characteristics.



Table 52

Associations Between Selected Characteristics and Using a Mechanism to Ensure that Patients Complete Screening and Follow-up Tests

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
Specialty			
Family/General Practice	229	REF	REF
Internal Medicine	116	0.76 (0.45 – 1.26)	.28
Obstetrics/Gynecology	52	0.55 (0.28 – 1.06)	.08
Practice Type			
Single Specialty	254	0.99 (0.62 – 1.59)	.98
Multiple Specialty	137	REF	REF
Practice Location			
Urban	329	REF	REF
Rural	68	1.56 (0.85 – 2.86)	.15
Physician Sex			
Male	270	REF	REF
Female	126	1.25 (0.76 – 2.06)	.38
Time Since Medical School			
< 10 years	54	REF	REF
10 – 19 years	127	1.74 (0.89 – 3.40)	.10
20 – 29 years	134	3.54 (1.77 – 7.08)	.01
30+ years	80	2.36 (1.08 – 5.18)	.03

Note. 64.69% of physicians reported using at least one mechanism to ensure that screening tests referred for are completed. Adjusted odds ratios & p-values are from model including all characteristics.

Table 53

Associations Between Selected Characteristics, Screening Status, and Using a Follow-up Mechanism to Ensure Return of FOBT Kits

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
Specialty			
Family/General Practice	112	REF	REF
Internal Medicine	49	1.19 (0.53 – 2.65)	.68
Obstetrics/Gynecology	30	1.25 (0.49 – 3.21)	.64
Practice Type			
Single Specialty	125	1.92 (0.91 – 4.06)	.09
Multiple Specialty	63	REF	REF
Practice Location			
Urban	156	REF	REF
Rural	35	1.21 (0.54 – 2.69)	.65
Physician Sex			
Male	156	REF	REF
Female	35	0.60 (0.25 – 1.43)	.25
Screened for Colon Cancer			
Yes	153	REF	REF
No	38	0.67 (0.29 – 1.56)	.35

Note. 40.40% of physicians reported using a mechanism to ensure FOBT kit return. Adjusted odds ratios & p-values are from model including all characteristics. Only physicians ages 50 and older were included in this analysis.

Table 54

Associations Between Selected Characteristics, Screening Status, and Using a Mechanism to Ensure that Patients Complete Screening and Follow-up Tests

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
Specialty			
Family/General Practice	112	REF	REF
Internal Medicine	49	0.64 (0.30 – 1.38)	.26
Obstetrics/Gynecology	30	0.47 (0.19 – 1.13)	.09
Practice Type			
Single Specialty	125	0.87 (0.43 – 1.76)	.70
Multiple Specialty	63	REF	REF
Practice Location			
Urban	156	REF	REF
Rural	35	0.86 (0.38 – 1.95)	.71
Physician Sex			
Male	156	REF	REF
Female	35	1.44 (0.62 – 3.35)	.40
Screened for Colon Cancer			
Yes	153	REF	REF
No	38	0.84 (0.39 – 1.82)	.66

Note. 67.19% of physicians reported using at least one mechanism to ensure that screening tests referred for are completed. Adjusted odds ratios & p-values are from model including all characteristics. Only physicians 50 years of age and older were included in this analysis.

Table 55  
Physician Recommendations for Digital Rectal Examination

	Family Practice (N = 229)	Internal Medicine (N = 116)	Total (N = 345)
% Recommending DRE (CI)	89.82 % (85.13 – 93.16)	90.52% (83.65 – 94.68)	90.06% (86.39 – 92.82)
Mean start age (SD)	45.39 (5.22)	45.71 (5.30)	45.36 (5.27)
Mean test interval (SD)	1.27 (0.76)	1.14 (0.41)	1.22 (0.66)
% Stop DRE at given age (CI)	31.16% (25.08 – 37.95)	47.57% (38.10 – 57.23)	36.76% (31.48 – 42.36)
Mean stop age (SD)	77.75 (6.09)	79.89 (5.37)	78.66 (5.79)

Note. CI = 95% confidence interval.

Table 56  
Physician Recommendations for Prostate Specific Antigen

	Family Practice (N = 229)	Internal Medicine (N = 116)	Total (N = 345)
% Recommending PSA (CI)	81.25% (75.57 – 85.85)	86.21% (78.63 – 91.39)	82.94% (78.54 – 86.59)
Mean start age (SD)	47.18 (4.60)	48.20 (4.35)	47.52 (4.56)
Mean test interval (SD)	1.30 (0.70)	1.32 (0.72)	1.30 (0.70)
% Stop PSA at given age (CI)	46.02% (38.77 – 53.45)	63.27% (53.28 – 72.23)	52.19% (46.25 – 58.07)
Mean stop age (SD)	76.50 (5.65)	79.19 (5.33)	77.67 (5.60)

Note. CI = 95% confidence interval.

Table 57  
Physician Discussion of Risks and Benefits of Prostate Cancer Screening

	Family Practice (N = 229)	Internal Medicine (N = 116)	Total (N = 345)
% Discussing risks/benefits of DRE (CI)			
Rarely/never	20.80% (15.98 – 26.61)	27.59% (20.20 – 36.44)	23.10% (18.92 – 27.88)
Sometimes	23.45% (18.36 – 29.44)	25.00% (17.94 – 33.70)	23.98% (19.73 – 28.81)
Always/almost always	55.31% (48.75 – 61.69)	45.69% (36.83 – 54.84)	52.05% (46.73 – 57.32)
% Discussing risks/benefits of PSA (CI)			
Rarely/never	4.85% (2.70 – 8.56)	5.26% (2.38 – 11.26)	4.99% (3.12 – 7.89)
Sometimes	16.30% (12.03 – 21.71)	30.70% (22.90 – 39.78)	21.11% (17.09 – 25.79)
Always/almost always	78.41% (72.56 – 83.31)	64.04% (54.80 – 72.33)	73.61% (68.65 – 78.03)

Note. CI = 95% confidence interval. Responses do not sum to 100% because three physicians selected “don’t know.”

Table 58

Physicians' Use of Educational Materials to Discuss Risks/Benefits of Prostate Cancer Screening

	Family Practice (N = 229)	Internal Medicine (N = 116)	Total (N = 345)
% Using Written Materials (CI)			
Rarely/never	50.66% (44.16 – 57.14)	60.00% (50.77 – 68.57)	53.80% (48.47 – 59.04)
Sometimes	37.89% (31.78 – 44.40)	34.78% (26.62 – 43.95)	36.84% (31.87 – 42.11)
Always/almost always	11.45% (7.90 – 16.31)	5.22% (2.35 – 11.16)	9.36% (6.68 – 12.95)
% Using Videotapes (CI)			
Rarely/never	99.55% (96.84 – 99.94)	97.37% (92.12 – 99.15)	98.81% (96.85 – 99.55)
Sometimes	0.45% (0.06 – 3.16)	1.75% (0.44 – 6.78)	0.90% (0.29 – 2.75)
Always/almost always	0.00%	0.88% (0.12 – 6.01)	0.30% (0.04 – 2.10)
% Using Websites (CI)			
Rarely/never	78.48% (72.57 – 83.40)	86.84% (79.28 – 91.93)	81.31% (76.76 – 85.13)
Sometimes	19.73% (15.00 – 25.50)	11.40% (6.72 – 18.69)	16.91% (13.26 – 21.32)
Always/almost always	1.79% (0.67 – 4.70)	1.75% (0.44 – 6.78)	1.78% (0.80 – 3.92)
% Using Other Tools (N)	5.72% (13)	5.22% (6)	5.56% (19)

Note. CI = 95% confidence interval. “Other tools” was usually described as verbal counseling during office visit.

Table 59

Proportion of Physicians Reporting they are Very Likely to Discuss Issues When Deciding Whether to Order PSA

	Family Practice (N = 229)	Internal Medicine (N = 116)	Total (N = 345)
Efficacy of PSA in detecting prostate cancer	68.42% (62.08 – 74.15)	53.91% (44.74 – 62.83)	63.56% (58.31 – 68.50)
Efficacy of PSA in reducing mortality from prostate cancer	56.39% (49.84 – 62.72)	52.63% (43.44 – 61.65)	55.13% (49.79 – 60.36)
PSA may prompt further tests that may not reveal cancer	65.79% (59.37 – 71.68)	59.48% (50.29 – 68.05)	63.66% (58.42 – 68.60)
Anxiety may occur while waiting for results or taking more tests	32.89% (27.08 – 39.28)	24.14% (17.19 – 32.78)	29.94% (25.32 – 35.02)
Prostate cancer may not cause significant morbidity if untreated	55.95% (51.82 – 62.30)	59.48% (50.29 – 68.05)	57.14% (51.82 – 62.30)
Efficacy of treatment options for prostate cancer	35.68% (29.70 – 42.15)	34.78% (26.62 – 43.95)	35.38% (30.47 – 40.62)
Possible side effects of treatments for prostate cancer	34.36% (28.45 – 40.80)	35.65% (27.41 – 44.84)	34.80% (29.91 – 40.02)

Note. 95% confidence intervals in (). Remaining response options were “unlikely” and “somewhat likely” to discuss. Physicians’ responses were approximately equally divided across the three response options for discussing treatment efficacy & side effects of treatment for prostate cancer, and anxiety that may occur while waiting for results. For other issues, the majority of responses (80% or more) fell into either “somewhat likely” or “very likely” to discuss.

Table 60

Physicians’ Collection of Family History of Prostate Cancer

Proportion of patients family history collected % (CI)	Family Practice (N = 229)	Internal Medicine (N = 116)	Total (N = 345)
Between 0-25%	12.89% (9.09 – 17.96)	12.07% (7.26 – 19.39)	12.61% (9.48 – 16.59)
Between 25-50%	14.67% (10.60 – 19.94)	12.93% (7.93 – 20.38)	14.08% (10.76 – 18.21)
Between 50-75%	17.78% (13.30 – 23.36)	18.97% (12.80 – 27.17)	18.18% (14.43 – 22.66)
75% or more	54.67% (48.09 – 61.08)	56.03% (46.86 – 64.81)	55.13% (49.79 – 60.36)

Note. CI = 95% confidence interval.

Table 61

Male Physicians' Recommendations for Digital Rectal Examination by Own Prostate Screening Status

	Screened with PSA (N = 120)	Not Screened with PSA (N = 113)
% Recommending DRE (CI)	95.83 (90.35 – 98.26)	89.09 (81.73 – 93.71)
Mean start age (SD)	44.70 (5.67)	45.77 (4.94)
Mean test interval (SD)	1.25 (0.82)	1.26 (0.65)
% Stop DRE at given age (CI)	33.91 (25.83 – 43.06)	40.21 (30.91 – 50.27)
Mean stop age (SD)	79.51 (4.98)	77.02 (5.58)

Note. CI = 95% confidence interval.

Table 62

Male Physicians' Recommendations for Prostate Specific Antigen by Own Prostate Screening Status

	Screened with PSA (N = 120)	Not Screened with PSA (N = 113)
% Recommending PSA (CI)	98.32 (93.50 – 99.58)	75.45 (66.53 – 82.62)
Mean start age (SD)	47.00 (4.79)	48.15 (4.38)
Mean test interval (SD)	1.28 (0.72)	1.40 (0.73)
% Stop PSA at given age (CI)	51.30 (42.19 – 60.33)	57.83 (46.96 – 67.99)
Mean stop age (SD)	77.96 (4.71)	76.96 (5.45)

Note. CI = 95% confidence interval.

Table 63

Male Physicians' Discussion of Risks and Benefits of Prostate Cancer Screening by Own Prostate Screening Status

	Screened with PSA (N = 120)	Not Screened with PSA (N = 113)
% Discussing risks/benefits of DRE (CI)		
Rarely/never	27.73 (20.41 – 36.48)	16.96 (11.07 – 25.11)
Sometimes	18.49 (12.47 – 26.52)	30.36 (22.53 – 39.51)
Always/almost always	53.78 (44.76 – 62.56)	50.89 (41.67 – 60.05)
% Discussing risks/benefits of PSA (CI)		
Rarely/never	6.78 (3.42 – 13.01)	5.36 (2.42 – 11.45)
Sometimes	24.58 (17.62 – 33.17)	17.86 (11.80 – 26.11)
Always/almost always	68.64 (59.70 – 76.39)	76.79 (68.04 – 83.71)

Note. CI = 95% confidence interval. Responses do not sum to 100% for DRE because 2 physicians selected “don’t know.”



Table 64

Male Physicians' Use of Educational Materials to Discuss Risks/Benefits of Prostate Cancer Screening by Own Screening Status

	Screened with PSA (N = 120)	Not Screened with PSA (N = 113)
% Using Written Materials (CI)		
Rarely/never	59.32 (50.21 – 67.83)	44.25 (35.35 – 53.54)
Sometimes	34.75 (26.68 – 43.79)	46.90 (37.87 – 56.14)
Always/almost always	5.93 (2.85 – 11.96)	8.85 (4.82 – 15.71)
% Using Videotapes (CI)		
Rarely/never	99.13 (94.04 – 99.88)	98.18 (92.99 – 99.55)
Sometimes	0.87 (0.12 – 5.96)	0.91 (0.13 – 6.21)
Always/almost always	0.00	0.91 (0.13 – 6.21)
% Using Websites (CI)		
Rarely/never	85.34 (77.65 – 90.71)	72.07 (62.99 – 79.65)
Sometimes	14.66 (9.29 – 22.35)	24.32 (17.22 – 33.19)
Always/almost always	0.00	3.60 (1.35 – 9.24)
% Using Other Tools (N)	8.47 (10)	4.42 (5)

Note. CI = 95% confidence interval. “Other tools” was usually described as verbal counseling during office visit.

Table 65

Proportion of Male Physicians Reporting they are Very Likely to Discuss Issues When Deciding Whether to Order PSA by Own Screening Status

	Screened with PSA (N = 120)	Not Screened with PSA (N = 113)
Efficacy of PSA in detecting prostate cancer	55.93 (46.84 – 64.64)	64.60 (55.34 – 72.88)
Efficacy of PSA in reducing mortality from prostate cancer	45.30 (36.49 – 54.41)	53.10 (43.86 – 62.13)
PSA may prompt further tests that may not reveal cancer	45.38 (36.64 – 54.41)	70.80 (61.73 – 78.46)
Anxiety may occur while waiting for results or taking more tests	21.01 (14.59 – 29.29)	34.51 (26.31 – 43.76)
Prostate cancer may not cause significant morbidity if untreated	50.42 (41.48 – 59.33)	59.82 (50.47 – 68.51)
Efficacy of treatment options for prostate cancer	36.97 (28.76 – 46.02)	36.61 (28.19 – 45.93)
Possible side effects of treatments for prostate cancer	36.13 (27.99 – 45.17)	40.71 (32.02 – 50.02)

Note. 95% confidence interval in (. Remaining response options were “unlikely” and “somewhat likely” to discuss. Physicians’ responses were approximately equally divided across the three response options for discussing treatment efficacy & side effects of treatment for

prostate cancer, and anxiety that may occur while waiting for results. For other issues, the majority of responses (80% or more) fell into either “somewhat likely” or “very likely” to discuss.

Table 66

Male Physicians' Collection of Family History of Prostate Cancer by Own Prostate Screening Status

Proportion of patients family history collected % (CI)	Screened with PSA (N = 120)	Not Screened with PSA (N = 113)
Between 0-25%	12.61 (7.73 – 19.90)	12.39 (7.46 – 19.88)
Between 25-50%	12.61 (7.73 – 19.90)	15.04 (9.54 – 22.91)
Between 50-75%	17.65 (11.78 – 25.59)	17.70 (11.69 – 25.89)
75% or more	57.14 (48.08 – 65.75)	54.87 (45.59 – 63.82)

Note. CI = 95% confidence interval.

Table 67  
Physician Recommendations for Digital Rectal Examination

	Urban Practice (N = 283)	Rural Practice (N = 62)
% Recommending DRE (CI)	89.29 (85.07 – 92.42)	93.55 (83.98 – 97.57)
Mean start age (SD)	45.50 (5.24)	45.52 (5.27)
Mean test interval (SD)	1.25 (0.72)	1.10 (0.29)
% Stop DRE at given age (CI)	38.52 (32.60 – 44.81)	29.31 (19.03 – 42.25)
Mean stop age (SD)	78.41 (5.95)	80.29 (5.14)

Note. CI = 95% confidence interval.

Table 68  
Physician Recommendations for Prostate Specific Antigen

	Urban Practice (N = 283)	Rural Practice (N = 62)
% Recommending PSA (CI)	83.81 (78.98 – 87.71)	79.03 (67.10 – 87.45)
Mean start age (SD)	47.72 (4.46)	46.73 (4.85)
Mean test interval (SD)	1.31 (0.71)	1.29 (0.68)
% Stop PSA at given age (CI)	51.33 (44.80 – 57.81)	56.25 (42.03 – 69.51)
Mean stop age (SD)	77.62 (6.02)	78.00 (3.82)

Note. CI = 95% confidence interval.

Table 69  
Physician Discussion of Risks and Benefits of Prostate Cancer Screening

	Urban Practice (N = 283)	Rural Practice (N = 62)
% Discussing risks/benefits of DRE (CI)		
Rarely/never	24.29 (16.60 – 29.68)	17.74 (10.08 – 29.33)
Sometimes	23.21 (18.62 – 28.54)	27.42 (17.74 – 39.82)
Always/almost always	51.43 (45.56 – 57.26)	54.84 (42.36 – 66.74)
% Discussing risks/benefits of PSA (CI)		
Rarely/never	5.73 (3.54 – 9.17)	1.61 (0.22 – 10.65)
Sometimes	20.07 (15.76 – 25.21)	25.81 (16.42 – 38.11)
Always/almost always	73.84 (68.34 – 78.68)	72.58 (60.18 – 82.26)

Note. CI = 95% confidence interval. Responses do not sum to 100% because 3 physicians selected “don’t know.”

Table 70

Physicians' Use of Educational Materials to Discuss Risks/Benefits of Prostate Cancer Screening

	Urban Practice (N = 283)	Rural Practice (N = 62)
% Using Written Materials (CI)		
Rarely/never	54.29 (48.39 – 60.06)	51.61 (39.28 – 63.75)
Sometimes	35.36 (29.96 – 41.16)	43.55 (31.79 – 56.09)
Always/almost always	10.36 (7.28 – 14.53)	4.84 (1.56 – 14.02)
% Using Videotapes (CI)		
Rarely/never	98.91 (96.65 – 99.65)	98.36 (89.18 – 99.77)
Sometimes	1.09 (0.35 – 3.35)	0.00
Always/almost always	0.00	1.64 (0.23 – 10.82)
% Using Websites (CI)		
Rarely/never	81.88 (76.87 – 86.01)	78.69 (66.62 – 87.23)
Sometimes	16.67 (12.70 – 21.56)	18.03 (10.25 – 29.76)
Always/almost always	1.45 (0.54 – 3.81)	3.28 (0.82 – 12.25)
% Using Other Tools (N)	5.00 (14)	8.06 (5)

Note. CI = 95% confidence interval. “Other tools” was usually described as verbal counseling during office visit.

Table 71

Proportion of Physicians Reporting they are Very Likely to Discuss Issues When Deciding Whether to Order PSA

	Urban Practice (N = 283)	Rural Practice (N = 62)
Efficacy of PSA in detecting prostate cancer	65.25% (59.48 – 70.60)	55.74% (43.12 – 67.65)
Efficacy of PSA in reducing mortality from prostate cancer	56.23% (50.34 – 61.94)	50.00% (37.56 – 62.44)
PSA may prompt further tests that may not reveal cancer	66.67% (60.93 – 71.95)	50.00% (37.76 – 62.24)
Anxiety may occur while waiting for results or taking more tests	30.85% (25.71 – 36.51)	25.81% (16.42 – 38.11)
Prostate cancer may not cause significant morbidity if untreated	59.07% (53.20 – 64.70)	48.39% (36.25 – 60.72)
Efficacy of treatment options for prostate cancer	33.21% (27.92 – 38.97)	45.16% (33.26 – 57.64)
Possible side effects of treatments for prostate cancer	33.57% (28.26 – 39.33)	40.32% (28.87 – 52.93)

Note. 95% confidence interval in (). Remaining response options were “unlikely” and “somewhat likely” to discuss. Physicians' responses were approximately equally divided across the three response options for discussing treatment efficacy & side effects of treatment for prostate cancer, and anxiety that may occur while waiting for results. For other issues, the

majority of responses (80% or more) fell into either “somewhat likely” or “very likely” to discuss.

Table 72

Physicians’ Collection of Family History of Prostate Cancer

Proportion of patients family history collected % (CI)	Urban Practice (N = 283)	Rural Practice (N = 62)
Between 0-25%	12.14 (8.79 – 16.54)	14.75 (7.84 – 26.05)
Between 25-50%	14.29 (10.64 – 18.91)	13.11 (6.68 – 24.15)
Between 50-75%	18.57 (14.42 – 23.58)	16.39 (9.03 – 27.92)
75% or more	55.00 (49.11 – 60.76)	55.74 (43.12 – 67.65)

Note. CI = 95% confidence interval.

Table 73

Associations Between Selected Characteristics and Prostate Cancer Screening Informed Decision Making Best Practice

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
Specialty			
Family/General Practice	229	REF	REF
Internal Medicine	116	0.48 (0.28 – 0.82)	.01
Practice Type			
Single Specialty	218	0.94 (0.54 – 1.61)	.81
Multiple Specialty	124	REF	REF
Practice Location			
Urban	283	REF	REF
Rural	62	0.88 (0.47 – 1.67)	.70
Physician Sex			
Male	239	REF	REF
Female	105	1.17 (0.64 – 2.14)	.62
Time Since Medical School			
< 10 years	50	REF	REF
10 – 19 years	111	0.85 (0.39 – 1.86)	.69
20 – 29 years	114	1.39 (0.61 – 3.16)	.44
30+ years	68	0.87 (0.36 – 2.12)	.76

Note. Physicians were counted as using best practice if they indicated that they “Always or almost always” discussed the risks and benefits of PSA with patients prior to ordering the test. Adjusted odds ratios & p-values are from model including all characteristics.

Table 74

Associations Between Selected Characteristics, PSA Screening Status, and Prostate Cancer Screening Informed Decision Making

Characteristic	Physician <u>N</u>	Adjusted OR (95% CI)	P value
Specialty			
Family/General Practice	155	REF	REF
Internal Medicine	78	0.39 (0.20 – 0.77)	.01
Practice Type			
Single Specialty	151	0.85 (0.42 – 1.71)	.65
Multiple Specialty	79	REF	REF
Practice Location			
Urban	186	REF	REF
Rural	47	0.94 (0.43 – 2.03)	.87
Time Since Medical School			
< 10 years	23	REF	REF
10 – 19 years	61	0.61 (0.19 – 1.97)	.41
20 – 29 years	82	2.57 (0.75 – 8.81)	.13
30+ years	66	1.39 (0.41 – 4.69)	.60
Screened with PSA			
Yes	120	REF	REF
No	113	2.37 (1.17 – 4.82)	.02

Note. Physicians were counted as using best practice if they indicated that they “Always or almost always” discussed the risks and benefits of PSA with patients prior to ordering the test. Adjusted odds ratios & p-values are from model including all characteristics. Only male physicians were included in this analysis.